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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DIVISION OF AGRICULTURAL ENGINEERING

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MONTHLY NEWS LETTER

WASHINGTON, D. C., FEBRUARY 21, 1927.

THE EUROPEAN CORN BORER SITUATION HAS BEEN IN THE FOREGROUND DURING THE PAST TWO WEEKS. CONGRESS HAS MADE AVAILABLE \$10,000,000 TO FIGHT THIS PEST IN THE MIDDLE STATES THIS YEAR. THIS DIVISION HAS BEEN ASSISTING IN PREPARING FOR THE WORK, ESPECIALLY IN CONNECTION WITH WRITING SPECIFICATIONS FOR THE MACHINERY WHICH INCLUDES HUNDREDS OF TRACTORS, TRUCKS, PLOWS AND SPRAYING MACHINERY, WITH THE NECESSARY ACCESSORIES. SINCE THIS YEAR'S FIGHT MUST BE WON OR LOST LARGELY ON WORK DONE WITHIN THE NEXT FOUR MONTHS, TIME IS A VERY IMPORTANT ELEMENT.

TABULATION HAS BEEN MADE SHOWING THE USE OF LAND IN DRAINAGE DISTRICTS IN THE LOWER MISSISSIPPI VALLEY AND THE SOUTH ATLANTIC COASTAL PLAIN, BY R. D. MARSDEN AND R. P. TEELE OF THE BUREAU OF AGRICULTURAL ECONOMICS, FROM THEIR JOINT INVESTIGATIONS OF LAST SPRING AND FALL. FIFTY-EIGHT DISTRICTS WERE STUDIED THAT WERE INTENDED FOR THE RECLAMATION OF UNUSED LAND, RATHER THAN FOR IMPROVING LAND ALREADY IN FARMS, ALTHOUGH PROBABLY SOME 16 PER CENT OF THE 4,100,000 ACRES COMPRISING THOSE DISTRICTS WAS UNDER CULTIVATION PRIOR TO THE DRAINAGE. IN 1926, THE CULTIVATED PORTION WAS ABOUT 38 PER CENT, THE TOTAL AREA BEING DIVIDED APPROXIMATELY 1,555,000 ACRES CULTIVATED AND 2,545,000 ACRES UNCULTIVATED. IN THESE DISTRICTS IN MISSOURI, ARKANSAS, AND MISSISSIPPI COMPRISING 2,568,000 ACRES, THE CULTIVATED PORTION HAD INCREASED FROM 20 PER CENT WHEN THE DISTRICTS WERE ORGANIZED TO 53 PER CENT IN 1926. FOR THE 414,000 ACRES IN LOUISIANA, THE CULTIVATED PORTION WAS DETERMINED AS 18 PER CENT BOTH WHEN THE DISTRICTS WERE ORGANIZED AND IN 1926. FOR THE 264,000 ACRES IN THE TWO CAROLINAS, THE CULTIVATED AREA INCREASED FROM 23 TO 29 PER CENT WHILE THE 854,000 ACRES STUDIED IN FLORIDA WERE 4 PER CENT CULTIVATED AT ORGANIZATION OF THE DISTRICTS AND 7 PER CENT CULTIVATED IN 1926.

THIS DIVISION IS INVESTIGATING THE PROBLEM OF RECLAIMING ALKALI LAND NEAR CALDWELL, IDAHO, IN COOPERATION WITH THE IDAHO EXPERIMENT STATION, TO OBTAIN ACCURATE DATA ON THE PROPER MANAGEMENT OF ALKALI AND WATER-LOGGED LANDS IN THE PROCESS OF AND FOLLOWING RECLAMATION. FROM 5 TO 10 YEARS WILL BE REQUIRED TO COMPLETE THE INVESTIGATION. J. C. MARR IS IN CHARGE OF THE WORK.

EXCEPT FOR THE PRESENCE OF A "PERCHED" WATER LEVEL FOLLOWING IRRIGATION ON PORTIONS OF THE TRACT, WHICH CONDITION IS BEING RELIEVED BY SHALLOW OPEN TRENCHES, THE TRACT APPEARS TO BE WELL DRAINED, THE WATER LEVEL RANGING FROM 4 TO 8 FEET FROM THE SURFACE.

WHITE BLOSSOM SWEET CLOVER AND HUBAM SWEET CLOVER ARE PROVING TO BE THE BEST CROPS. THE BEST RESULTS OBTAINED WITH MANURE OR STRAW RESULTED FROM SEEDING ON TOP OF A 2-INCH LAYER OF WELL ROTTED MANURE. WHERE MANURE OR STRAW WAS PLOWED UNDER, OR WHERE SEED WAS COVERED WITH A THIN LAYER, NO BENEFICIAL RESULTS WERE APPARENT.

CHEMICAL ANALYSES SHOW THAT ON PLOTS TREATED WITH GYPSUM OR SULPHUR THERE IS A DEFINITE TENDENCY TOWARD REDUCTION OF CARBONATE CONTENT IN THE SOIL. THE REDUCTION IS GREATER WITH THE INCREASE IN SOLUBLE SULPHATES PRODUCED BY THE TREATMENTS. THIS IS MORE NOTICEABLE IN THE NORMAL CARBONATE FRACTION THAN IN THE BICARBONATES. NEITHER THE REDUCTION IN CARBONATES NOR THE INCREASE IN SULPHATES IS PROPORTIONAL TO TOTAL TREATMENTS. THE SOLUBILITY FACTORS OF THE TREATMENTS WOULD CAUSE THIS SITUATION TO TAKE PLACE. ACCORDING TO CROP SURVEYS MADE ON THESE PLOTS IN 1925, WHEN BARLEY WAS PLANTED, AND IN 1926 WHEN WHITE BLOSSOM SWEET CLOVER WAS PLANTED, THE AREA COVERED BY CROP DECREASED SLIGHTLY, BUT THE AREA COVERED BY GOOD TO EXCELLENT CROP INCREASED BY CLOSELY 20 PER CENT. IT IS NOT CLEAR THAT THIS IMPROVEMENT RESULTED FROM CHEMICAL TREATMENTS.

A NEW DEPARTURE IN IRRIGATION DISTRICT MANAGEMENT IS INDICATED BY THE TERMS OF A CONTRACT BETWEEN NEVADA IRRIGATION DISTRICT, CALIFORNIA, AND THE PACIFIC ELECTRIC DEVELOPMENT COMPANY, A PRIVATE CORPORATION, AS RECENTLY PUBLISHED IN THE NEWSPAPERS.

UNDER THE TERMS OF THE AGREEMENT, WHICH IS TO RUN FOR 99 YEARS, THE COMPANY ASSUMES THE POSITION OF AGENT AND EMPLOYEE OF THE DISTRICT, PAYS ALL OPERATING COSTS, AND ASSUMES BOTH PRINCIPAL AND INTEREST OF BONDED INDEBTEDNESS ON ISSUES UP TO \$12,500,000. IN RETURN IT IS TO HAVE ALL CURRENT EARNINGS ABOVE \$10,000 PER YEAR AND TO HAVE THE RIGHT TO PRODUCE AND SELL POWER GENERATED BY DISTRICT WATER THROUGH THE BUILDING OF DAMS AND POWER HOUSES. AFTER 50 YEARS WATER IS TO BE DELIVERED FREE TO EACH 40 ACRES OF LAND UNDER GRAVITY FLOW, NOT TO EXCEED A TOTAL OF 275,000 ACRES. ON EXPIRATION OF THE AGREEMENT THE DISTRICT IS TO OWN ALL PROPERTIES FREE FROM DEBT.

SO FAR AS KNOWN TO THIS OFFICE, SUCH AN AGREEMENT IS ENTIRELY WITHOUT PRECEDENT IN IRRIGATION DISTRICT OPERATION. IT WILL BE INTERESTING TO OBSERVE THE OPERATION OF SUCH A CONTRACT AND THE ATTITUDE OF THE COURTS TOWARD IT.

R. G. HEMPHILL AND H. F. BLANEY WERE IN THE BERKELEY OFFICE DURING A LARGE PART OF JANUARY, IN CONNECTION WITH SILT AND DUTY OF WATER PROJECTS AND OTHER MATTERS. MESSRS. C. A. TAYLOR AND S. H. BECKETT WERE ALSO IN BERKELEY TO CONFER ON THE SAN DIEGO COUNTY COOPERATIVE WORK.

L. M. WINSOR WAS IN BERKELEY FOR SEVERAL DAYS, AFTER WHICH HE WENT TO UTAH FOR THE PURPOSE OF ASSISTING THE BUREAU OF BIOLOGICAL SURVEY IN A STUDY OF CONDITIONS AT THE MOUTH OF BEAR RIVER, AND TO PARTICIPATE IN THE PREPARATION OF A REPORT ON THE FEASIBILITY OF CONSTRUCTING DIKES TO FORM FRESH WATER BAYS FOR WATER FOWL.

W. A. HUTCHINS SPENT SEVERAL DAYS IN PORTLAND AND SALEM, OREGON, FOR THE PURPOSE OF ASSISTING IN THE PREPARATION OF LEGISLATION DESIGNED TO CARRY OUT THE RECOMMENDATIONS OF THE COMMITTEE WHICH INVESTIGATED THE ECONOMIC SITUATION ON OCHOCO IRRIGATION DISTRICT.

A. T. MITCHELSON WAS ELECTED SECRETARY OF THE EAST BAY FEDERAL BUSINESS MEN'S ASSOCIATION, AT THE LAST MEETING OF THAT ORGANIZATION. THE DISTRICT COMPRISES OAKLAND, ALAMEDA, BERKELEY, RICHMOND AND POINTS AS FAR SOUTH AS SAN JOSE AND AS FAR EAST AS PITTSBURG.

O. E. RAMSER HAS BEEN ENGAGED IN MAKING MEASUREMENTS OF THE FLOW IN THE ST. FRANCIS RIVER FLOODWAY TO DETERMINE WHAT EFFECT THE CLEARING OF SUCH FLOODWAYS WOULD HAVE UPON THEIR DISCHARGE CAPACITY AND THE CONSEQUENT REDUCTION IN FLOOD HEIGHTS. HEAVY RAINS AND MELTING SNOW DURING JANUARY HAVE PRODUCED UNUSUALLY HIGH WATER IN THE FLOODWAY NEAR MARKED TREE, ARKANSAS. THIS FLOODWAY, THE LARGEST IN THE COUNTRY, WITH A DITCH INSIDE THE LEVEES ON EACH SIDE, IS ONE-HALF MILE WIDE. BETWEEN THE DITCHES THE FLOODWAY IS COVERED WITH A GROWTH OF PRACTICALLY VIRGIN TIMBER. RECENT PRECIPITATION PRODUCED A DEPTH OF FLOW OF FROM 9 TO 10 FEET IN THE FLOODWAY AND CAUSED THE OVER-TOPPING OF ONE OF THE LEVEES IN SEVERAL PLACES RESULTING IN CONSIDERABLE DAMAGE TO PROPERTY IN THE FLOODED AREAS.

MR. RAMSER VISITED IOWA CITY DURING THE MONTH WHERE HE CONFERRED WITH MR. YARNELL AND ATTENDED THE MEETINGS OF THE IOWA ENGINEERING SOCIETY WHERE HE DELIVERED A PAPER ON SILTING AND EROSION OF DRAINAGE DITCHES.

M.A.R. KELLEY RECENTLY MADE A TRIP TO PAINTER, VIRGINIA, TO MAKE FURTHER OBSERVATIONS UPON VENTILATION AND TEMPERATURE CONTROL OF A POTATO STORAGE HOUSE. THIS HOUSE WAS CONSTRUCTED OF CONCRETE CINDER BLOCKS AND OBSERVATIONS ARE BEING MADE TO DETERMINE THEIR SUITABILITY FOR THIS PURPOSE. PLANS FOR THE CONSTRUCTION OF THIS HOUSE WAS FURNISHED BY THIS DIVISION.

J. T. BOWEN HAS MADE THE NECESSARY CALCULATIONS AND PREPARED SPECIFICATIONS FOR EXTENDING THE 4,000 VOLT, 4 WIRE, 3 PHASE, 60 CYCLE ELECTRIC LINE AT THE BUREAU OF ANIMAL INDUSTRY EXPERIMENT FARM, BELTSVILLE, MARYLAND, AND INSTALLING AN ADDITIONAL TRANSFORMER STATION CONSISTING OF 3 SINGLE PHASE 25 KVA, 2300/220 VOLT TRANSFORMERS. SIMILAR WORK HAS BEEN DONE AT THIS FARM FOR TWO ADDITIONAL 2300 VOLT SINGLE PHASE LINES. MR. BOWEN HAS ALSO MADE CALCULATIONS FOR AN INSTALLATION CONSISTING OF HIGH TENSION LINES, TRANSFORMERS AND LOW TENSION DISTRIBUTION SYSTEM RECENTLY COMPLETED FOR THE BUREAU OF ANIMAL INDUSTRY AT THE MORGAN HORSE FARM, MIDDLEBURY, VERMONT.

G. M. WARREN REVIEWED AND SUGGESTED CHANGES IN A PROPOSED PLUMBING CODE TO BE PRESENTED TO THE ILLINOIS LEGISLATURE. THIS CODE MAY LATER FORM THE BASIS OF A RECOMMENDED CODE BY THE AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS.

J. G. SUTTON, WHO IS IN THE WASHINGTON OFFICE, STATES THAT AFTER STUDYING THE RESULTS OF THE IRRIGATION AND DRAINAGE EXPERIMENTS AT FRANKLIN, LOUISIANA, ON SUGAR CANE IT APPEARS THAT THE AVERAGE CANE

PLANTATION IS AT PRESENT GREATLY IN NEED OF BETTER SURFACE DRAINAGE OF THE LOWLANDS AS WELL AS DEEPER UNDERDRAINAGE OVER THE ENTIRE PLANTATION. THE RESULTS OF THE IRRIGATION EXPERIMENTS, SHOW THAT IRRIGATION OF THE PLANT CROP HAS A BAD EFFECT ON THE STUBBLE CROP THE FOLLOWING YEARS.

HEAVY RAINS IN THE EARLY PART OF THIS MONTH HAVE CAUSED RENEWED FLOODS IN THE UPPER MISSISSIPPI VALLEY WHERE VERY GREAT DAMAGE OCCURRED LAST FALL. MR. SHAFER, WHO IS ENGAGED IN PREPARING INVESTIGATIONS IN THAT SECTION, REPORTS THAT GREAT DAMAGE HAS BEEN DONE ALONG SOME STREAMS WHERE LEVEES HAVE BEEN OVERTOPPED AND WASHED OUT.

GEORGE R. BOYD HAS CONTINUED MAKING PYROTOL STUMP BLASTING DEMONSTRATIONS IN SOUTHERN STATES. HE HAS ALSO ARRANGED A COOPERATIVE EXPERIMENT ON TREE POISONING ON A FARM IN OKLAHOMA. TWO HUNDRED TREES OF VARIOUS KINDS HAVE BEEN MEASURED AND NUMBERED. THE OWNER WILL POISON 25 OF THEM WHILE DORMANT, WITH THE FORMULA RECOMMENDED BY THIS DIVISION AND 25 WITH TWICE AS MUCH ARSENIC. THEN ON MAY 1 AND AGAIN ON JUNE 1 HE WILL TREAT 50 MORE THE SAME WAY AND WILL RECORD DATES WHEN POISON TAKES EFFECT.

GEORGE A. MITCHELL HAS RECENTLY SPENT A WEEK IN THE WASHINGTON OFFICE PUTTING HIS MANUSCRIPT ON "SEWAGE IRRIGATION IN THE EASTERN STATES" INTO FINAL FORM FOR PUBLICATION.

D. L. YARNELL IS PLANNING A TENTATIVE SCHEDULE OF OPERATIONS FOR THE PROPOSED EXPERIMENTS TO DETERMINE THE EFFECT OF PIERS ON THE FLOW OF WATER.

DEPARTMENT CIRCULAR 405 ENTITLED "THE DOMESTIC OIL BURNER" PREPARED BY A. H. SENNER, HAS JUST BEEN RECEIVED FROM THE PRINTING OFFICE.

P. A. EWING IS SPENDING THE MONTH OF FEBRUARY IN WASHINGTON COLLABORATING WITH R. P. TEELE, OF THE BUREAU OF AGRICULTURAL ECONOMICS, IN PREPARING FOR PUBLICATION A REPORT ON THE ECONOMIC LIMITS OF THE COST OF WATER FOR IRRIGATION. SEPARATES IN MIMEOGRAPHED FORM ALREADY HAVE BEEN ISSUED FROM TIME TO TIME SINCE THE FIELD INVESTIGATION WAS COMPLETED.

R. L. HANSON HAS RETURNED TO BARKSDALE, WISCONSIN, FROM OLD HICKORY, TENNESSEE, WHERE HE HAS BEEN SUPERVISING THE CLOSING OUT OF THE SMOKELESS POWDER STORAGE AT THAT POINT. CARTRIDGING OF PYROTOL HAS BEEN RESUMED AT BARKSDALE IN ANTICIPATION OF THE LARGE SPRING DEMAND. PYROTOL SHIPMENTS FROM THE THREE PLANTS SINCE JULY 1, 1926, HAVE BEEN AS FOLLOWS:

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| BARKSDALE, WISCONSIN | 2,211,450 POUNDS |
| DU PONT, WASHINGTON | 3,909,900 " |
| GIBBSTOWN, NEW JERSEY | 1,239,250 " |

